www.water-alternatives.org Volume 9 | Issue 3
Movik, S.; Mehta, L.; van Koppen, B. and Denby, K. 2016.
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Water Alternatives 9(3): 456-472

Emergence, Interpretations and Translations of IWRM in South Africa

Synne Movik
Norsk Institutt for Vannforskning (NIVA), Oslo; synne.movik@niva.no

Lyla Mehta
Institute of Development Studies at the University of Sussex, Brighton, UK; and Department of Environment and Development Studies (Noragric), Norwegian University of Life Sciences, Aas, Norway; l.mehta@ids.ac.uk

Barbara van Koppen
International Water Management Institute (IWMI), Southern Africa Regional Programme, South Africa; b.vankoppen@cgiar.org

Kristi Denby
Department of Environment and Development Studies (Noragric), Norwegian University of Life Sciences, Aas, Norway; kristidenby@gmail.com

ABSTRACT: South Africa is often regarded to be at the forefront of water reform, based on Integrated Water Resources Management (IWRM) ideas. This paper explores how the idea of IWRM emerged in South Africa, its key debates and interpretations and how it has been translated. It maps out the history, main events, key people, and implementation efforts through a combination of reviews of available documents and in-depth semi-structured interviews with key actors. While South Africa sought to draw on experiences from abroad when drawing up its new legislation towards the end of the 1990s, the seeds of IWRM were already present since the 1970s. What emerges is a picture of multiple efforts to get IWRM to 'work' in the South African context, but these efforts failed to take sufficient account of the South African history of deep structural inequalities, the legacy of the hydraulic mission, and the slowness of water reallocation to redress past injustices. The emphasis on institutional structures being aligned with hydrological boundaries has formed a major part of how IWRM has been interpreted and conceptualised, and it has turned out to become a protracted power struggle reflecting the tensions between centralised and decentralised management.

KEYWORDS: IWRM, interpretations, institutions, historical legacies, South Africa

INTRODUCTION

Integrated Water Resources Management (IWRM) has been the dominant water management paradigm since the 1990s emerging out of the recognition of the dysfunctions of sectoral approaches to water management (GWP, 2000; Jonker, 2007; Molle, 2008). Still, as argued by the authors in this Special Issue there is a lot of ambiguity around what IWRM actually is and how it should be interpreted and practised (cf. Mehta et al., this issue). It is a 'boundary concept' (Gieryn, 1999), as it offers something for everyone. How does such an influential idea emerge and get a foothold? How does it continue to hold sway over people in widely different geographical and political contexts? Tracing the

emergence and spread of IWRM is as much an exercise in the history of ideas as it is in understanding trends in water management (see Mehta et al., this issue, Allouche, this issue).

This paper explores how the idea of IWRM emerged in South Africa, the key debates and interpretations and how it has been translated. It maps out the history, main events, key people, and implementation efforts. South Africa was in the vanguard of water policy and practice in the 1990s and underwent its own reform of the water sector as part of the wider political changes after 1994. Its constitution was one of the first to recognise the human right to water and food (RSA, 1996: section 27 (b); Gleick, 1998). The translation of the constitution into water policy was executed by key South African thinkers, drawing on the advice and expertise of international experts. South Africa holds a unique position in African and global water management for a variety of reasons. These include its size, progressive constitution and water policies, the nature of inequality, interactions of race, class and historical legacies, and also institutional reform processes such as decentralisation and catchment management agencies. These reasons coupled with the fact that the National Water Act of 1998 as well as the 1997 White Paper not only wholeheartedly embrace an IWRM approach (see also Denby et al., this issue) but are some of the most progressive water policies in the world, making South Africa an interesting case to explore in IWRM terms.

While there have been many papers written about IWRM in South Africa (e.g. Jonker, 2007; Funke et al., 2007; Goldin et al., 2008) most of them tend to be case studies looking at specific localities, or analysing particular dimensions of IWRM. This paper, in contrast, seeks to understand the life of the idea of IWRM at different sites and scales in the country. The main question that we explore is how (and by whom) IWRM was brought in and conceptualised in the South African policy, legislation and implementation? In particular, we focus on the main debates around catchment management, and how these have been translated into practice. These questions were addressed by studying the actors and key policy events that were associated with the introduction of IWRM in South Africa. This involves mapping the existing literature on the subject, including grey material and unpublished documents, and doing in-depth interviews with key people who have played active roles in the process of propagating IWRM in South Africa. A particular emphasis is placed on understanding the institutional ramifications of IWRM, and how the ideas have targeted the institutional landscape that forms the backbone of South African water management.

HOW IWRM EMERGED IN SOUTH AFRICA: THE 1998 NATIONAL WATER ACT FOUNDATIONS

In order to appreciate South Africa's water governance, it is necessary to understand its unique position in historical and political economy terms. South Africa has had a multiplicity of governance forms through the course of its history – tribal kingdoms, the Dutch East India Company, the British Empire, the Union of South Africa, and the apartheid and post-apartheid republics, representing the whole gamut from authoritarian, semi-authoritarian and democratic state forms. Over time, water policy, law and institutions came to reflect the increasingly complex needs of multiple actors represented by different political regimes. A common feature has been the central role of the state (Swatuk, 2008).

The Union State played a particularly important role in terms of investing in large-scale infrastructure development to boost white agriculture in what was the South African version of the 'hydraulic mission'. The needs of urban areas and mines were mainly catered to through the financial investments of the mining houses, or self-financed by local municipalities, mainly targeted towards white communities, while neglecting the needs of the black majority (Turton and Henwood, 2002; Turton et al., 2004; Schreiner and Hassan, 2011). Interbasin transfers were an integral part of the hydraulic mission, but the ecological and social implications of such schemes have not been sufficiently addressed (Snaddon et al., 1998; Gupta and van der Zaag, 2008; see also Movik et al., this issue). What the hydraulic mission represented was an effort at gaining control over the water resources, a control that was vested in the hands of the white minority, leaving the black population with no control at all.

This is reflected in the distribution of water use, as registered in the Water Authorisation and Registration Management System database. In rural areas, 1.2% of the people use 95% of the water. The other 98.8%, most of whom depend on agriculture-based livelihoods, access only 5% of the water. This corresponds to a Gini coefficient of 0.99 (Cullis and van Koppen, 2008).

In addition to the investments in water infrastructure engineering, there was the grand-scale social engineering experiment set in motion, accelerated by the National Party once it came to power in 1948, to create a country neatly divided into segregated 'homelands' for the indigenous populations in order to foster what was euphemistically termed 'segregated development' (Terreblanche, 2002). The process of creating such homelands meant uprooting more than 3.5 million people, forcibly splitting up families and clans and resettling them in marginal areas with poor soils (Platzy and Walker, 1985; Levin and Weiner, 1997). The apartheid era efforts at carving up the country according to skin hues, ethnicity and race are still visible in modern day South Africa. The former homelands are very much part of the landscape – for example, in the area where the former homeland of KaNgwane used to be, now part of Mpumalanga, cattle grids mark subtle boundaries between former homeland territories and commercial farmlands. Despite post-1994 efforts to get rid of homeland legacies, systems established during colonialism and apartheid have not been done away with (King, 2005). People are still residing in overcrowded areas as a result of a staggeringly skewed land distribution. As Hall (2004: 219) notes, "the extent of land dispossession in colonial and apartheid South Africa dwarfs that of other southern African states". Inequitable land access also inevitably shapes access to water – in the Olifants Basin, for instance, 95% of the water was in the hands of white farmers and miners (Cullis and van Koppen, 2007).

The 1956 Water Act was associated with a patchwork of institutional, legal and regulatory arrangements emanating from the Act and its many amendments. A central tenet was the riparian doctrine – i.e. that water rights were appurtenant to owning land along a river – while groundwater was considered private property. Under the Apartheid regime, the homelands were supposed to become self-governing states, but only four accepted self-governance. Only one, Bophuthatswana, had its own water law. In the other homelands the republic's law was still valid.

Late in the 1960s, the Apartheid Government became increasingly concerned about water scarcity and pollution and a Commission of Enquiry into Water Matters was set up to address the issues. In 1970, the Commission Report was published, introducing a range of ideas that resembled the later concept of IWRM. It recognised water pricing, the environment as an important user in its own right, and launched the concept of wastewater discharges to mitigate pollution from industries and mines, and also promoted the idea of 'catchment committees'. Moreover, there were permits for forestry and arrangements to compensate for negatively affected downstream water users (van Koppen and Schreiner, 2014).

After a couple of decades of political turbulence, the early 1990s offered a more optimistic outlook, and in 1994 came the major transition from the apartheid republic to a democratic state. The country went from being an isolationist siege economy to a nonracial democracy and a global world player (Terreblanche, 2002). The political transition warranted a new water law to translate the new constitution in the water field. This also opened up space for reform that had been initiated by the Apartheid government. The policy networks that formed around the time of the drafting process were characterised by a set of strong personalities. Kader Asmal was a powerful figure, who emphasised the human rights aspect of water, fittingly enough with a background as a human rights lawyer. The White Paper of 1997 set out the principles of the water reform (RSA, 1997). In 1997, the Water Services Act was passed, followed a year later by the 1998 National Water Act (NWA). As there were major political reforms taking place at the same time as the water reform process was unfolding, there was a critical mass in terms of redrawing the maps and doing a systematic institutional design exercise, including bringing to life the IWRM idea of basin institutions. But it also meant major overhauls of the government administration, with the rolling out of new local municipalities to replace the old structures of apartheid. It was going to take some time before the local municipalities would be able to shoulder

their new responsibilities. In the meantime, therefore, the Department of Water Affairs and Forestry (DWAF) was given the responsibility of tackling backlogs in domestic water supplies until local government structures were fully operational (Eales, 2011).

The drafting of the Act was done by a team of South Africans, led by Minister Kader Asmal, with extensive public participation. A number of international experts were also invited to share their experiences with water reform, from FAO and countries like Zimbabwe, Australia, Namibia, the US, Finland (as donor), the UK, France and other European countries, New Zealand and Mexico. However, donor influence was not considered to be massive, as expressed by a water specialist working in a donor agency in Pretoria: "I would struggle to think that IWRM is externally imposed in South Africa; in other African countries where water ministries were set up by donors about 15 years ago, that may be the case; but not in South Africa" (Interview, April 2014).

In terms of creating the new legislation, water professionals across the world considered South Africa to be ahead of the game in many respects, particularly relating to the human right to adequate drinking water as enshrined in the Constitution, and the concept of the 'Reserve'. The Reserve basically entailed setting aside a certain amount of water in-stream, in order to be able to meet basic human and ecological needs. This further expanded on the notion of environmental needs that were already on the agenda in the 1970s Commission Report. Some environmentalists thought that if you take care of the environment, including wetlands and biodiversity, this would also help alleviate poverty.[1] The influence of the environmentalists in the drafting process remained so strong that some argue that the NWA was 'hijacked' by environmentalists (De Coning, 2006; Movik, 2012; Muller, 2014). The National Water Act also shifted to a nationwide licensing system for new water uptake, while recognising the apartheid era's highly unequal Existing Lawful Uses as continuing to be lawful until a process of area-wide compulsory licensing was complete.

A key aspect of the NWA was the emphasis on redressing past inequalities. It was recognised that the NWA itself did not provide sufficient detail on how to go about achieving a more equitable distribution, and hence the Water Allocation Reform (WAR) process was set in motion in 2003, resulting in the publication of the WAR position paper in 2006, which was later revised in 2008. However, very little progress has been made with respect to reallocation, due both to political and technical issues, and the emergence of particular 'allocation discourses' which emphasised the risks of redistribution (see Movik, 2012).

These trends need to be seen in the context of larger political changes and ideological struggles. From the early post-1994 days, South Africa's water sector was caught in an ideological struggle with respect to rights-based approaches embedded in the Reconstruction and Development Policy (RDP). Dealing with the backlog in water services formed a key component of the RDP, while in all other domains cost-recovery aims prevailed in line with the institutional recommendations of development banks and some donors. This has been a contested issue plaguing the water sector, and compromising issues of access to water (Mehta and Ntshona, 2004; Eales, 2011; Dugard, 2012). The African National Congress (ANC) governing party since 1994, underwent a radical change from a socialist development discourse to a neoliberal consensus; from growth through redistribution and meeting basic needs, to redistribution through growth achieved through neoliberal expert orientation (Peet, 2007). The Growth, Employment and Redistribution (GEAR) policy was a strategy that endorsed liberalism and deregulation, and by implication a scaled-down role for the State (Villa-Vicencio and Ngesi, 2003). In particular, the deregulation of the agricultural sector meant that there was a shift towards more high-value commercial crops, which according to Hall (2004) served to increase the gap between 'winners' and 'losers'.

[1] Interview with member of water law drafting team, 22 April 2013.

Another phenomenon that unfolded during this period was the veritable 'brain drain' from a number of departments. The Department of Water Affairs and Forestry lost many of its most experienced and senior staff, who chose to start afresh in the consultancy sector rather than stay with a job they found increasingly frustrating.[2]

INTERPRETATIONS OF IWRM: DEBATING WHAT SHOULD BE INTEGRATED AND HOW?

Having thus set the scene in terms of the South African water governance context, we now move on to look at the idea of IWRM in more detail and how it was interpreted in different settings and at different levels. In 1997, a workshop was organised to present case studies and lessons from other countries, including Mexico, France, Australia, Britain, Malaysia, India and Zimbabwe. Australia constituted an important source of influence during the drafting of the National Water Act, as it was argued that it was very similar to South Africa in geophysical terms. According to one member of the drafting team, the model of Catchment Management Agencies (CMA) was drawn from Australia.[3] While the term IWRM is not mentioned explicitly in the NWA itself, the ideas associated with IWRM are clearly present.

> Our whole National Water Act is, as far as I'm concerned, about IWRM. It is all about local institutions and getting people involved and it is also about balancing environment, social and development aspects of water. All this is IWRM. Biswas and others say that IWRM is not workable in South Africa. But it is no blueprint. It should be interpreted as best practice and something to work towards. We can take what suits us in South Africa; it comes from our White Paper, from Rio and from South African democracy (Interview with water department official, July 2013).

However, how IWRM should be interpreted was clearly a matter of debate. The Water Research Commission, which is an important knowledge hub on water governance in South Africa, saw itself as playing a key role in shaping the understanding of IWRM. The Commission was established in 1971 and is South Africa's major think tank on national water issues and has initiated numerous research projects with IWRM as the main theme. According to several informants within the Water Research Commission (WRC), it was the WRC that brought IWRM to South Africa early in the 1990s.[4]

> IWRM was en vogue internationally then – it was intellectually appealing to many of us in South Africa who were agonising and debating about similar issues. We had a charismatic Minister and a progressive government then and having outsiders endorse new policies etc. which boded well for the time. Progressive South African thinkers thought this was the best practice of the time (Interview with WRC, July 2013).

Early on, officials and the people at the WRC spent a lot of time debating and trying to define what IWRM was. It started off with Integrated Catchment Management (ICM), and then this evolved into Integrated Water Resources Management. However, it was unclear what was meant by 'integration'. For instance, one issue was whether or not water resources and water services should be integrated, which did not occur. The operational elements of water services were ring-fenced into a separate Act. This in turn gave rise to an institutional set-up that separated the water services aspect from the water resources, where Europe pushed the IWRM bit, and America and the World Bank pushed the water services sector. The fact that two Acts were created was influenced by the then Director-General's opinions on the distinction that needed to be made between water in pipes and water as a resource. He referred to the Constitution, which makes this distinction. However, there was no consensus with respect to such a division, and some people argued that there was "no proper integration which is what

[2] Personal communication with water consultant, 17 July 2013.

[3] Interview with WRC (Water Research Commission), 10 August 2006.

[4] Interview with WRC, 16 July 2013.

IWRM calls for" (Interview, June 2013). The related institutional mandates were debated as well. One key informant argued that the department did not have the capacity to implement water services. Moreover, the ANC wanted to bring the government closer to the people, and hence the responsibility for service delivery was vested in local governments. The problem with local governments is that they are often quite cash-strapped and lacking in capacity. Provincial governments are supposed to deal with noncompliance regarding service delivery but "they have no clue" (Interview with water official in Pretoria, June 2013). DWA cannot implement directly because the national government cannot normally intervene locally. Another issue relating to integration was the initial lack of coordination between the land and water reforms, which meant that the debates about integration within the water realm, and in particular water allocation, did not link up to the political processes playing out with respect to land reform (Movik, 2012: 120; see also Denby, 2013; Denby et al., this issue).

The first National Water Resources Strategy (NWRS), which was published in 2004, draws on the Global Water Partnership (GWP) definition of IWRM and states the importance of linking domestic water use/needs, sanitation and health issues to IWRM. The necessity of integrating local planning instruments, such as the Integrated Development Plan (IDP) with water supply and sanitation services is also underscored by Pollard and Du Toit (2008).

> Even though our Water Act is all-encompassing, we have these two separate legislations (…) there was always a discussion in terms of IWRM, with respect to the separation into resources and services – there was a white paper for resources, and a separate one for water supply, which I think was too compartmentalised (…). There were research reports written on 'how to integrate', and the perennial question was – what are we trying to integrate, is it vertical, is it horizontal – what would perfect integration look like? (Interview with WRC, July 2013).

According to the WRC informants, when the principle of IWRM was 'sort of established', it seemed a little bit too idealistic – in the sense that it did not really acknowledge the context. For instance, in South Africa the whole system is based on interbasin transfers, there are some 375 interbasin schemes across the country, and if half of the water is transported out of the basin in seven of the nine provinces, the question arises – what then is left to deal with? Because the South African system is so complex, it makes trying to adopt IWRM principles very complex too. Basically, it is an engineered system that one wants to transform into a people-centric basin management system. Still, as one of the interviewees said, "in the beginning it was so clear, it was just so clear that with the subsidiarity principle (…) you have layers of authority; you had a clear comprehensive picture of what the landscape would look like" (Interview, July 2013), adding that this was probably naïve. An important point was that the CMAs needed enough revenue and autonomy to do their job. The challenge consisted of figuring out the layers of hydrological boundaries and administrative boundaries, which were largely translated in planning instruments such as the Integrated Development Plans created bottom-up by the municipalities. Implementing IWRM was first and foremost a concern with getting the institutional set-up right.[5]

Parallel with the focus on services, environmental concerns were a key issue on the agenda as well. One adviser to the water law review team pointed out that research in the Kruger National Park in the 1970s raised concerns over the fact that the perennial Sabie River was drying up, and an emerging issue was how to deal with this. The idea of creating environmental rights surfaced already at an early stage as well.[6] The emphasis on determining what the Ecological Reserve should be in each basin was a major contributor to the licensing and the process of Water Allocation Reform (Movik, 2012), as it is so difficult to determine what it should be and close to impossible to monitor (Bourblanc, 2015).

[5] Interview with WRC, 17 July 2013

[6] Interview with water law drafting team adviser, 22 April 2014.

These diverse understandings and implications of IWRM are reflected in the following quote:

> IWRM makes sure that decision making integrates services and management issues, i.e. demand side and also how to deal with growing water services and delivery. It also highlights the need to 'value' the resource and conserve. It helps to go against silo thinking and facilitates joint planning. Of course, it is a mantra like gender. But whether departments actually work together and integrate is another matter. I would hate to dismiss it totally but not sure it is actually happening (Interview, April 2014).

While the WRC's understanding of IWRM seemed to follow the conventional ideas around basin management and grappling with the question of institutional integration at the national and regional levels, another version of IWRM was pursued by a donor-initiated 'pilot' exercise led by Danida. As part of a five-country pilot project on IWRM, it launched a project in three provinces in South Africa in 2000, the Crocodile West-Marico in the Northwest Province, the Mvoti to Mzimkulu in KwaZulu-Natal and the Olifants-Doorn in the Western Cape Province. The basic idea of the Danida IWRM pilot projects was an interpretation of IWRM as being about participatory bottom-up water management; about local people's access to water for livelihoods. Hence, the projects focused on small-scale water users – farmers and other small nonagricultural users – in the three regions. The programme was run in partnership with the Department of Water Affairs (DWA), the South African Local Government Association (SALGA) and aimed to support the creation of CMAs in the regions. The project used donor funds to 'do things differently rather than to do more of the same'. The focus was on poverty reduction and on using IWRM to achieve the MDGs. However, the approach was controversial. One of the people who had been involved in the project talked about how Danida's strategies in the first five-six years tended to focus on IWRM strategies at the national level, which he called 'paper stuff'. He felt it was too vague, and that one needed to take IWRM 'to the ground' and to try to help people with real water problems in their villages, which is what Danida then did. The idea was to address local people's water needs holistically without separating domestic and irrigation needs, which is conventionally the case. The project also sought to consider both the social and economic factors involved, assess whatever infrastructure was needed, and undertake the necessary steps and include everything related to water. That, essentially, was taking a bottom-up holistic approach. The main desire was to leave the national-level strategies and get to the real problems, whilst still acknowledging the need for strategies as such.

A similar 'livelihoods-based' approach to IWRM was pursued by a research programme organised by WaterNet,[7] in cooperation with UNESCO-Delft and the Consultative Group of International Research (CGIAR) Challenge Program on Water and Food in the Olifants catchment in South Africa. It focused on improving rural livelihoods and interpreting 'integration' to mean better integration of 'green' and 'blue' water, and arguing for a "new IWRM-based water governance from village to basin scale" (Love et al., 2004: 1). The idea was to develop guidelines for catchment management and scale it up to a needs-based IWRM framework for sustainable water for food development at the basin scale. Though the approach is a bottom-up, needs-based and livelihoods-centred one, the idea of the 'basin scale' is still very much present there as well.

Indeed, the idea of basin-scale management emerges as a central feature in the South African discourse on IWRM. The concept of Catchment Management Agencies (CMAs) is seen to provide an arena for stakeholder participation and negotiations. Anderson (2005) outlines ways in which historically disadvantaged individuals can be engaged in CMA planning processes, using the Inkomati Water Management Area as a case study. She argues that "a key criterion for successful IWRM should be the degree to which the approach empowers disadvantaged and marginalised communities" (Anderson, 2005: 1). She highlights the challenges of legitimate representation, accessibility,

[7] Southern African regional network for academic capacity building on IWRM. WaterNet established a node in Western Cape University and, from 2009 onwards, a chair in IWRM. Two of the yearly symposia were held in South Africa (see Movik et al., this issue for a detailed analysis of WaterNet).

information/communication and the challenges of arriving at a shared consensus in a context of power imbalances. Pollard and Du Toit (2011) pick up on the latter issue, highlighting the challenges inherent in having a diverse array of stakeholders, to arrive at a shared vision of how water will be used in a specific hydrological region. They argue for the usefulness of what they call 'mental models' in order to overcome the differences in understandings and meanings among stakeholders in a context of ongoing power struggles.

CREATING INSTITUTIONS ACCORDING TO HYDROLOGICAL BOUNDARIES

Problems with creating CMAs

A key feature of the National Water Act was the idea of creating new institutions, CMAs, based on hydrological boundaries, referred to as Water Management Areas (WMA) in South Africa. The NWA states that all water resources need to be managed in an integrated manner, and where appropriate, management functions should be decentralised and delegated to the regional or catchment level to enable stakeholder participation. Section 73(4) of the NWA states that "the Minister must promote the management of water resources at the catchment management level by assigning powers and duties to catchment management agencies when it is desirable to do so" (RSA, 1998: 8). This structure was seen as quasi-federal by some commentators (Simeon and Murray, 2009) whereas others would describe it as 'co-operative government' (Constitutional Court, cited in Muller, 2014).

The notion of hydrological boundaries and catchments was present in the 1970 Commission report, but these ideas were mainly used as a basis for developing infrastructure to transfer water out of the basin, rather than for the purpose of governing water resources in accordance with basin boundaries per se. So, even though the idea was not entirely new, the concept of CMAs created much confusion, as well as uncertainty about the intentions of DWA among water users (Jonker et al., 2010). There was a lot of thinking, and it was also a case of looking at the viability of all the originally proposed 19 CMAs in terms of revenues. With respect to the widespread practice of interbasin transfers and how to deal with this from a catchment perspective, the recipient catchment would have to pay the water management charge to the donor catchment.[8]

A Water Law Review Task Team was set up, and for CMA proponents within this team, IWRM was a fortunate, internationally prestigious principle to invoke for making their case. IWRM as a term was profusely used in the task team's discussion documents. Integrated Catchment Management was seen as a key element of IWRM, and it should be further developed as an approach (van Koppen and Schreiner, 2014).[9] The task team also considered devolution of central responsibilities to the provincial and local governments that were being established, but rejected this option as they were 'political'. Moreover, the argument was that they lacked constitutional powers and experience. Interventions during the negotiations of a new Constitution made sure that political federalisation of river management did not happen, as it would have involved the allocation of water resource functions to sub-sovereign levels (Muller, 2014). The approach to river management in subsequent legislation also avoided introducing 'basin federalism', the allocation of powers and functions to administrative units based on basin boundaries. The CMAs in the new South Africa were to serve a double role of upward and downward accountability. In 1999, after the 1998 NWA had come into force, the Department established a new directorate, called 'Catchment Management', and later Water Management Institutions Governance, which subsequently became the Chief Directorate for Institutional Oversight with five members of staff. The idea was to support and guide the process of establishing CMAs. A CMA

[8] Interview with WRC, 16 July 2013.

[9] See link for details of approach: http://inkomaticma.co.za/publications/icma-documents.html

task team was put together, and given the mandate to produce guidelines and tools in order to guide the setting up of CMAs in the Water Management Areas. In spite of seeing CMAs as adhering to the subsidiarity principle of management at the lowest appropriate level, CMAs retain a strong upward accountability to the Minister, conforming to the national mandate and the need to coordinate the extensive infrastructure networks which run across provincial, basin, and national boundaries. The initial functions of CMAs prescribed in section 80 of the NWA are light: to investigate and advise in water use; to develop a Catchment Management Strategy; to coordinate the related activities of water users and of the water management institutions; to promote the coordination of its Catchment Management Strategy implementation with the implementation of any applicable development plan established in terms of the Water Services Act, 1997; and to promote community participation in water use. When CMAs 'mature', the Minister can delegate or assign more functions, in particular licensing and planning and also allocating responsibilities for the funding, development, operation and maintenance of catchment-level water resources infrastructure either by other institutions or directly.

Members of the Regional DWAF staff were expected to be transferred to CMAs. From the outset, the major differences between the country's catchments were appreciated, including the fact that less wealthy areas would not be able to establish a fully self-financed CMA, based on water use charges. The resource intensity of CMAs was recognised, but no specific state funding was negotiated. "CMAs were to focus on the most problematic and conflict-ridden catchments facing water scarcity and pollution, where government cannot solve the issues alone" (Interview, July 2013).

Particularly, environmentalists found an appreciated opportunity to approach water resources as integrated eco-habitats within the (assumed) proper hydrological boundaries of a catchment (WMA). Integration for consensus seeking would be across vertical layers, as well as water protection, development and utilisations, and land uses. In terms of promoting equity, other than ensuring equitable and demographic participation and board representation, redress was not an explicit goal and it was not further operationalised. There was a realisation that attempting to reallocate water within the framework of a CMA would be too politically sensitive. The task team members realised that CMAs based on partnership and consensus seeking would not be adequate for water allocation decisions in South Africa at that point in time.

One of the staff members employed in the Institutional Oversight unit recounted the early experiences with rolling out the CMAs, stating that the first four or five years were spent intensely focused on policies and guidelines, and "when looking back, I see that we were incredibly naïve" (Interview, August 2013). Further, he stated that:

> What was intriguing, was that in the early days it was the 'tail wagging the dog', some of the people in the regions started to work on proposals while we were still trying to get the guidelines in place. It was a bizarre moment when they were running ahead of us (Interview, August 2013).

The same staff member in the Institutional Oversight Department felt that the main reason that two CMAs had actually been established by 2015 – the Inkomati (in 2004) and the Breede-Overberg (in 2005) – is the tenacity of champions in the regions. There was generally a lot of resistance from the regions; many people did not see the point in establishing CMAs, and areas such as the Free State, the North-West Province and Gauteng were not very cooperative. The Eastern Cape was coming around to the idea. At the time, the Directorate staff thought "this was just something that the regions had to do, that we would develop the guidelines and then they would set about doing it. But like I said, we were incredibly naïve" (Interview, August 2013), and the Directorate staff did not appreciate the fact that there were going to be power struggles in the regions; they just thought that the regions would be supportive; that they would get on with it; and thus did not really engage with those discussions. There was a belief that the processes would take care of themselves. In hindsight, it is clear that much more preparatory work was necessary. These observations conform to what Funke et al. (2007) observed, that, while IWRM was official policy, it had yet to be 'officially' accepted in practice.

In the participatory processes leading up to the establishment of the CMAs, deep power imbalances persisted, in combination with a lack of decisiveness that negatively affected the processes. There were power struggles both among stakeholders and within the bureaucracy responsible for implementation, and eventually a paralysis in setting up the CMAs (see Denby et al., this issue for a detailed analysis of the Inkomati experience). An issue was that "you are basically asking staff from the government public sector to join a parastatal with the associated resistance and instability".[10] And regardless of whether the CMAs happened or not, they would still receive their bonus, which prompted the question of "how can you regulate someone whose salary is three times your own?". Then there is the decentralisation discussion that we are having now. If we decentralise, we are probably getting an even more skewed society.[11] CMAs would be liable to be captured by local interest groups. By contrast, Water Boards could maintain a national voice and would not get captured by local issues/interests to the same extent.[12]

> There was a change of leadership in the directorate in charge of institutional oversight and then the whole process of institutional realignment began. The task team worked closely together, but in the new director's opinion, the team was way beyond what it could do and there were simply too many institutions. From a pragmatic point of view, it was understandable that there was a need to reduce the number of CMAs. However, the current set-up was very logical from a governance point of view. When he (the new director) said 'it is not about governance, but about me telling you how many institutions there should be', that was the day I decided it was time to leave (Interview, August 2013).

Institutional realignments

In 2002, when the first National Water Resources Strategy (NWRS) was developed, the focus was on developing 19 CMAs, but over time it was realised how complex the process was, resulting in a mere two CMAs being established in 2004 and 2005. This led to a process of soul searching, and a review of the institutional landscape.

> The review revealed that there simply were too many entities reporting to the Minister. There were 279 irrigation boards, water boards, CMAs, etc. and their roles and responsibilities were overlapping and not clear. There was also the question of financial viability. This is when we decided to focus on consolidation – it is also easier when both administrative and hydrological boundaries are somewhat aligned. Change has also happened too slowly. The irrigation boards are still the stronghold of white farmers and the water reform process is rolling out so slowly, so change is not happening (Interview at DWA, July 2013).

Another aspect that led to a re-examination of current set-ups was the presence of participation fatigue. The long establishment process has eroded the social capital gains and undermined the trust of the stakeholders involved in the participatory processes to form the CMA.

> In South Africa water management is done with 'public participation'; even the pricing strategy is done by consulting NGOs, communities, Electricity Supply Commission (ESCOM), etc. But nobody thinks of whether people have the capacity to participate and what the implications of all this participation are. We also underestimated the time, money and effort required for public participation. We overdid it and tried to get everybody on board. You can't consult everybody. This is why institutional alignment will be better (Interview with DWA, July 2013).

In assessing the overall viability and capacity of the 19 WMAs, the minister announced in March of 2012 that in order to improve IWRM, the 19 WMAs must be consolidated into nine WMAs. The Inkomati

[10] Interview with task team member, 23 August 2013.

[11] Interview with WRC employees, 16 July 2013.

[12] Interview with DWA employee, 17 June 2013.

Water Management Area (IWMA) must merge with Mhlatuze-Usuthu WMA to form the Inkomati-Usuthu WMA. As stated by a water expert in Pretoria:

> We started with so many naïve visions of what the CMAs would have done. We need to be more pragmatic now regarding decentralisation and what is possible. In hindsight, maybe it is positive that we tripped and fell with IWRM. We can now be more realistic of what is possible. We also need an incubation process and soul searching exercise to really bring people together to figure out what is actually possible (Interview, July 2013).

So it was back to the drawing board, with a deep sense of pragmatism. This pragmatism is coloured by an increasing disillusionment with IWRM among other members of staff at the WRC.

DISCUSSION

The previous sections have highlighted how IWRM emerged and how it has been interpreted in diverse ways in South Africa. The South African situation is unique and differs from many other countries in the region in two major ways. The long reign of colonialism and apartheid meant that the majority of the population were squeezed into small marginal portions of the vast country, which had long-term implications for the productive potential of these areas. The 'hydraulic mission' meant that the water resources were highly developed, and the water resources system is currently rapidly approaching the 'closed' stage (Grey and Sadoff, 2006).

So, how is one to understand the emergence of IWRM against this backdrop? One important dimension was the environmental concerns, which were also an aspect in the Commission Report of the 1970s that contained many ideas that were similar in nature to those touted by modern-day IWRM advocates. When the time finally came around for opening up the country for democratic rule, the most pressing needs were certainly doing something about the backlog of water services, which was not least influenced by the human rights-background of the then Minister. The split that occurred at this time in terms of two separate Acts later became a focal point in the debates on what should be 'integrated' in IWRM, because some viewed the strict separation of services and resources as going against the grain of the 'I' in IWRM. A further pressure exacerbating this debate is the fact that in the post-apartheid era there has been an increasing trend of migration towards the urban centres, and peri-urban and squatter settlements putting further pressures on an already overstretched infrastructure.

When it came to the aspect of resources management, environmentalists and conservationists were still a force to be reckoned with. Hence, despite the emphasis on redressing past injustices and reallocating water, the concept of IWRM seemed ideally fit to serve the purpose of the environmental lobby.[13] Water as a means for poverty eradication, though implicitly a goal, was not really well thought out – as a lawyer who was instrumental in the water law drafting process later admitted (personal communication to co-author van Koppen).

South Africa's past government's early strong focus on water control meant large-scale movement of water between basins to meet the needs of the (white) mines, energy, urban centres and agricultural areas, which necessitated huge investments in infrastructure. The development of large-scale infrastructure projects, including the establishment of a supporting bureaucracy, has had significant implications for what IWRM would look like in the South African context, mainly in terms of how it has facilitated large-scale interbasin transfers.

[13] However, as pointed out by an anonymous reviewer, the requirements of the reserve have also hardly been met in the functional CMAs.

For instance, the presence of powerful irrigation boards, as a result of the long history of investing in the (white) agricultural sector through generous subsidies and infrastructure support schemes, meant that the attempts at creating a new set of tiered governance according to hydrological boundaries did not start from scratch. The lowest tier of Water Users Associations (WUAs), was envisioned by some as emerging out of the across-the-board conversion of the existing Irrigation Boards, and to make them more representative and inclusive in the process. That project was met with much resistance and dragging of feet on the part of the already established commercial farmers, and hence the speed at which Irrigation Boards were converted into the new, more democratic WUAs, was extremely low – also with a lot of window-dressing taking place when it in fact did happen (Faysse and Gumbo, 2004; Movik, 2012), adding another dimension to the debate on decentralisation. While there was clear direction early on that the ultimate intent was to follow through with the idea of the 'subsidiarity principle' in IWRM and delegate responsibility down to the 'lowest appropriate level', this was clearly fraught with difficulty in the South African context. One consequence was the fact that the DWA did not relinquish its powers to issue licences to the ICMA until 2015, which created confusion among many water users regarding who was actually in charge (Movik, 2010; IUCMA, 2015; also Denby et al., this issue). This reinforces the claim made by one of the experts tasked with setting up the CMAs, namely, that South Africa just wasn't ready for that kind of decentralisation effort, as it was far too political, and would risk getting tied up in power struggles on the ground. However, at the time of finalising this article, it is clear that CMAs have more power now than in the past, including making final proposals on licence allocations for approval by the head office (Senior water policy consultant, personal communication).

A further feature that sets South Africa apart from the other case studies in this Special Issue is the presence of the Water Research Commission (WRC), funded from levies on water use. Set up in 1971 after a period of severe water shortages and expanding demand by an industrialising white economy that underscored the necessity of better knowledge, its main aim was to facilitate research and generate water knowledge and technologies. As mentioned, studies by the WRC supported the drafting of the National Water Act (1998). As a national knowledge hub, the WRC was also key in studying implementation projects along IWRM lines, and facilitating national and international debate on possible meanings of IWRM as relevant for the South African context. While the WRC and others were struggling to get to grips with what IWRM was and how it should be interpreted, certain donors set out to develop their own interpretations and operationalising of IWRM in selected localities of the country. Hence, there emerged a situation where there was a national stance on IWRM at the level of national policy documents (such as the National Water Resources Strategy), while the CMAs had their own Catchment Management Strategies alongside the diverse interpretations followed by donors. For instance, the Danida project took a more bottom-up view and stirred up debates on IWRM. Their efforts emphasised the participatory and poverty aspects of IWRM and the need to integrate land and water issues in a bottom-up way. These experiments thus serve to illustrate the myriad of ways in which integration can be understood, as reflected in the ongoing debates within the research community as well. What is interesting is the 'parallel lives' of diverse sets of IWRM interpretations.

Institutional arrangements became a focal point around which many of the IWRM debates played out, both within the WRC and the wider water research community. A key issue that resurfaces is the ideal-typical notion of institutions and the naïveté that coloured much of the thinking in terms of institutions. The new institutional set-up was being rolled out on an existing set of institutional structures and power constellations, and not on a blank surface that could be moulded into some technical ideal way of governing resources. While the WRC was hard at work trying to come to terms with what IWRM was – taking ICM as the point of departure – a sense was crystallised that IWRM was first and foremost about getting the institutions for river basin management right. This focus on the river basin does not explicitly come through in any of the Dublin principles or the GWP definition, but it is still what many people think about when they think of IWRM. Strikingly, in many of the countries of

SADC, not just South Africa, there is an emphasis on the river basin aspect, but as in Germany and elsewhere it was hard to focus on ecological and hydrological boundaries (see Movik et al., this issue). Hence, the logic of revisiting the idea of nine CMAs to be partly aligned with hydrological boundaries and partly with the administrative units of DWA's regional offices in each province. This brought to the fore the inherent tensions existing around devolving power to the regions, reflecting an intrinsic tension in the very idea of IWRM between a centralised 'holistic' approach and the desire to decentralised management at lower levels. The issue of the lack of actual decentralisation in the South African context was raised by one of the external experts, Hector Garduño, to which the Director General retorted "you don't understand South Africa" (Interview, November 2013). More broadly, the institutional set-up brought out how beset by power struggles the issue was, and particularly the relative autonomy of the regional offices. This underscored the point of the GWP southern Africa officer in South Africa that even though they were based in Pretoria, they had no influence on South Africa's policies.

Rolling out the idea of setting up 19 CMAs proved to be a long-winded uphill struggle. One issue was simply due to capacity constraints while the government was trying to do everything at once (Schreiner and Hassan, 2011) but also because of unforeseen regional resistance, looming tensions of centralisation/decentralisation, and the stickiness of water allocation reform.

> We need to get the governance structure right which affects IWRM delivery on the ground. We also need stronger regulation processes – regulation is not enforced and unlawful water use is a big problem. We don't have the capacity to deal with this. IWRM has helped us to enhance and address equity. Transformation takes time and cannot be done in ten years despite all the best intentions. We also spent a lot of time in time-consuming activities such as compulsory licensing, verification, and validation – to achieve equity we thought we needed to know who had what so that reallocation could take place. But perhaps we spent too much time and money tracking down small users instead of only going after the big guys. But you learn from experience. Initially you want to be perfect and register everybody. But looking back we don't need to get to 80% – we could stop at about 60%. With this pragmatism in place, we should start again. I still believe in the future! (Interview, July 2013).

However, the regions resisted the attempts of foisting upon them IWRM-based institutional novelties such as the CMAs. This resistance was not anticipated by the task team mandated to 'roll out' the CMAs, and led to a protracted and resource-intensive struggle to establish such hydrological-based institutions across the board, but with only two CMAs being operational 15 years after the promulgation of the act – largely thanks to regional champions. The main reason for delays now in establishing the other seven CMAs are human resource/staffing issues and delegation of powers i.e. licensing remains a contentious topic. Added to all this were the complexities of trying to coordinate the different institutional set-ups at the regional and local levels. The resulting messiness and intractability rendered the idea of practising IWRM a moving target, given all the urgent issues around redistribution of land and water and the entrenched power patterns in the region.

CONCLUSION

IWRM emerged on the global scene a little before South Africa emerged as a new rainbow nation, keen to liberate itself from the legacies of the past. Water was seen as one of the key areas of inequality and the resulting new legislation and constitutional processes were truly radical, progressive and ahead of the time. IWRM was integrated into these processes by South Africans and foreign experts who were keen to engage with 'best international practice'. In many ways South Africa was way ahead of its time, not just in water and sanitation services, but also in water management, e.g. through the concept of the Reserve. But some of the ideas developed to maturity in the 1998 National Water Act were already nascent in the Commission Report of the 1970s and thus the emergence of IWRM was not as novel and progressive as it might seem at first glance.

Our study has shown that IWRM in South Africa has been understood in different ways across scales and regions. The institutionalisation of arrangements based on IWRM principles, i.e. Catchment Management Agencies, engendered a level of institutional complexity at the regional and local levels that did not manage to break down the 'silos', particularly of land and water (cf. Denby et al., this issue). The level of ambition and the amount of time and resources spent led to a profound sense of reform fatigue and left many historically disadvantaged individuals feeling even more excluded and angry. A particularly poignant point is that the implementation process did not fully appreciate the historical legacies and skewedness of land and water access. Thus the rather 'ideal-typical' institutional arrangements layered over the deeply embedded geographies of inequality and power imbalances and the infrastructures of the hydraulic mission project that characterised much of the apartheid era. The failure to properly integrate the land and water reforms further reinforced the disconnect between the socio-geographical landscapes and the attempts at setting up river basin institutions and implementing IWRM (see Denby et al., this issue). The CMAs were not given full powers, but were kept reined in by the national department, largely to avoid these institutions being captured by the most powerful players at the basin level. The existing water boards are also quite powerful organisations, and there was a concern that the newly created CMAs should not become such 'monsters'. Thus, the aim of decentralisation was not really carried through, and there is a constant centralisation-decentralisation tension present in the water sector. There were also different understandings of what should be the focal point and modus operandi of IWRM implementation. Some saw it as a natural evolution of the ICM approach, whereas others took the participatory and poverty dimension to mean that people should be empowered through adopting a livelihoods-focused, bottom-up approach.

Our study suggests that the main emphasis was the focus on the need to get the institutional structures right. This was characterised, as many of our interviewees described, by a sense of naïve optimism in terms of what could be achieved. There was a certain degree of hubris involved in the planning to prepare for the establishment of 19 new institutions that did not conform to the existing administrative boundaries, but that would be created according to a logic of hydrology as the natural boundary. What the implementers had not foreseen was the resistance on the part of the regions, the protracted power struggles, and the smouldering tensions with respect to how authority should be parcelled out between the national department and the new basin-level organisations. In short, they didn't factor in the political contestations that would follow in the wake of this endeavour. The process became a costly, bureaucratic exercise, leaving those involved with a profound sense of disillusionment. Many early champions have left the government in favour of joining the private consultancy sector, characterised by some as a veritable 'brain drain'. But some of these consultants still continue to dip in and out of the ongoing processes and are considered as colleagues by some of their counterparts in the government.

Moreover, the efforts failed to engage with the ongoing processes of land reform and also the even more protracted process of reallocating water to redress past injustices, and the lack of coordination between land and water reform processes (see Denby et al., this issue). This was further underscored by the regional and local institutional hierarchies that failed to coordinate their activities adequately.

But IWRM is not totally irrelevant as Biswas may say. Also, it is not a donor-driven externally imposed process in South Africa unlike in other African countries. It has believers who feel that it is an 'approach' not a 'blueprint' that can guide and help, even if it is not implementable or workable in practice. This is despite the lack of evidence that it has helped enhance access and despite the fact that in reality local people may have been at best untouched and at worst badly affected by all the costly and bureaucratic institutional reform processes. Radical reform and reallocation processes have not taken place despite all the good intentions and structural inequalities that still persist.

Still, most of the people we interviewed[14] continue to have hope and are keen to learn from the experiences of the past decade. They are less idealistic and more pragmatic of what is possible but still look to their progressive constitution and policies and hope for more equitable water futures in South Africa.

ACKNOWLEDGEMENTS

We would like to thank the team members of the project Flows and Practices: The Politics of IWRM in Southern Africa for providing a stimulating arena for discussions. Particular thanks are due to Bill Derman, Alex Bolding, Alan Nicol and Jeremy Allouche and to the anonymous reviewers for their constructive comments. We also thank the Research Council of Norway for making this research possible.

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[14] It must however be stated that the people we interviewed for this article are not marginalised people lacking access but largely movers and shakers of water policies and programmes in the country.

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